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Afraid to Start Because the Outcome is Uncertain?: Social Site Characterization as a Tool for Informing Public Engagement Efforts

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Abstract

This paper introduces the concept of social site characterization as a parallel effort to technical site characterization to be used in evaluating and planning carbon dioxides capture and storage (CCS) projects. Social site characterization, much like technical site characterization, relies on a series of iterative investigations into public attitudes towards a CCS project and the factors that will shape those views. This paper also suggests ways it can be used to design approaches for actively engaging stakeholders and communities in the deployment of CCS projects. This work is informed by observing the site selection process for FutureGen and the implementation of research projects under the Regional Carbon Sequestration Partnership Program.

Keywords: CCS, public percetion, outreach, FutureGen, Regional Carbon Sequestration Partnerships

1. Introduction

It may seem challenging enough, from a technical perspective, to implement a carbon dioxide capture and storage (CCS) project. However, CCS implementation is further complicated because the technology touches on interconnected and somewhat controversial subjects including: human health and safety, global climate change, power plant construction, use of fossil fuel resources, project siting, risk perception, and a host of social issues that do not necessarily relate to CCS technology per se. Companies looking to move forward on large-scale demonstration projects and ahead, to commercialization, are faced with difficult choices about when and where to begin an outreach program. Often organizations are reluctant about beginning outreach for big projects like CCS

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because of a desire to make progress on a project before committing to it publicly, anxiety about how stakeholders will react, concerns about cost, and the potential impact that public perception could have on the project and, potentially, on the host company itself.[1]

Two recent CCS deployment efforts have been successful in generating levels of public acceptance by using different strategies. The FutureGen site selection process engendered a "bottom-up" approach to community engagement by offering a substantial financial incentive to a community for hosting an IGCC powerplant and related geologic sequestration facility. Many States and communities competed to become the host for the FutureGen project and siting proposals were developed by communities, not by the project developer, the FutureGen Alliance.[2,3] The U.S. Department of Energy's (DOE) Regional Carbon Sequestration Partnerships are employing more of a "top-down" approach to community engagement by working with industrial partners to conduct about two dozen pilot-scale injection field tests in locations around the country. These research projects are small, both in terms in injected volumes and duration, but have undertaken extensive public outreach and engagement activities ranging from sharing information with policy makers and regulators nearly a year before submitting permit applications to numerous public briefings, extensive website coverage and various innovative efforts including videos, workshops, focus group interviews and other activities.[4]

Going forward, very few projects can offer financial incentives at the scale of FutureGen, nor would it be productive to limit projects to research scale, but there is an important lesson for other potential CCS project developers to draw from a comparison of these two efforts. Namely, both efforts placed significant emphasis on understanding and addressing the technical and social characteristics of potential project sites. The term "site characterization" typically means the collection of surface and subsurface physical and other physical data about a proposed project site. We refer to this as "technical site characterization." This information is used to determine site suitability for sequestration, develop a reservoir simulation model, conduct risk assessment, design the construction and operation plans, and inform other physical activities. However, technical site characterization alone does not provide sufficient information for successfully completing these tasks. We contend that there is another step, "social site characterization," which also has an important role in informing decisions about site suitability, conducting risk assessment, designing project plans, and informing other project implementation activities.

2. The Concept of Social Site Characterization

Social site characterization provides insights into the factors contributing to risk perception. Risk is often defined in quantitative terms as:

Risk = probability an event or hazard occurs x the cost or damages from the event if it occurs[5]

For example, there was a natural release of a very large volume of carbon dioxide (CO_2) at Lake Nyos in the 1980's resulting in the asphyxiation deaths of thousands of people and their animals. Scientists believe that this was the result of a "limnic eruption," or rapid overturning of the lake water column. Many experts, including most recently the U.S. Environmental Protection Agency (EPA), have made the case that the rapid, catastrophic release of injected carbon dioxide is not likely because the physical characteristics of geologic confining units.[6] By most accounts, the risk of catastrophic release from appropriately sited, constructed and operated CCS projects is very low. Yet, the perceived risk of this kind of release is significant. The tragedy at Lake Nyos has been cited in opposition to proposed legislation in California calling for the state to develop regulations for CO2 sequestration, raised as a concern in permit hearings for projects sponsored the Regional Partnerships, and cited on web sites and information materials by groups opposing CCS. This concern about catastrophic release in conjunction with proposed CCS projects illustrates the difference between risk and perceived risk. Where risk is based on potentially quantifiable attributes, perceived risk is often described as:

Perceived Risk = the nature of the event or hazard x the context of the person perceiving the risk.[5]

In risk management, developers look for ways to reduce the probability of an event or the potential cost by taking mitigation measures. By analogy, social site characterization can help a developer to begin to understand and potentially address the additional variables contributing to perceived risk of CCS projects.

3. Conducting Social Site Characterization in CCS Projects

There are three important questions to consider in conducting social site characterization: (1) who are the stakeholders or interested parties; (2) what factors drive their perceptions of and attitudes towards CCS, and (3) how do you gather that information?

3.1. Who are the Stakeholders?

Any CCS project is going to be a local project carried out in the context of a national and even international debate. That means that the group of stakeholders or potentially interested parties comes from a wide area. A primary concern is going to be in identifying people who are potentially impacted by or interested in the project because it is in or near their property or community. At the local level, this will include officials, regulators, landowners, citizens, civic groups (including environmental, business and religious groups), business leaders, media and other opinion leaders. In the case of FutureGen in Illinois, farmers were a key group.[3] Moving further away from the project boundary, others at the state level are likely to be very interested including elected and appointed officials (including Members of Congress); regulatory agencies including those with oversight of pipelines, utilities, natural resources and environmental protection; economic development groups; and environmental and business groups. Moving even further away, at the national level, stakeholders include: government agencies including EPA and DOE; national environmental groups; potentially the financial community; and others.

3.2. What Factors Drive Public Perceptions and Attitudes towards CCS?

There are several schools of thought regarding the factors that influence public attitudes towards things like CCS projects. Bradbury et al. (2003) suggest a socio-cultural framework, called the "acceptability diamond," that ties together many of these ideas. Bradbury suggests that people bring a frame of reference to their perceptions of technology that is influenced by the extent to which they see that decisions about technology were made in a transparent and fair manner, the strength of their relationship with the project team and their sense that someone is accountable for protecting their safety.[7] Singleton (2007) suggests a psychometric matrix in which the extent to which a hazard is deemed "normal" or "dreaded" is plotted against the extent to which the hazard is well-known. Accordingly, the perception of radioactive waste risk ranks high in the unknown, dreaded hazard quadrant and the perception risk from driving a car rank low in the known, normal hazard quadrant.[8] An alternative is to consider these the factors to be compound or perceptions to be multi-dimensional and also subject to change over time.

A number of issues can be identified that will contribute to public perception of CCS. These include, but are not limited to:

- Local economic conditions: What are the major industries employing people in the community? Is the base more service oriented or more industrial? How is the economic health of the community and the region? What is the tax base? What are local energy costs?
- Local empowerment: How established/present are local property owners? Does the community feel that it has a voice in making decisions that impact the community? Are there examples of positive or negative examples of this? What is the community experience with industry or environmental concerns?
- Underlying views: What are the views and experience related to climate change, coal-based energy, renewable energy, coal mining, drilling, oil production, natural gas storage, and emissions trading? Is there a history of royalty payments for mineral or other property rights?
- Environment: Has a community experienced environmental damages in the past? How was it resolved?
- Trust: Do stakeholders trust the regulators, the project developers, or the federal government? Do stakeholders trust local universities or environmental groups for unbiased information?
- Media: Is there a strong local media presence? What other media are common in the community?

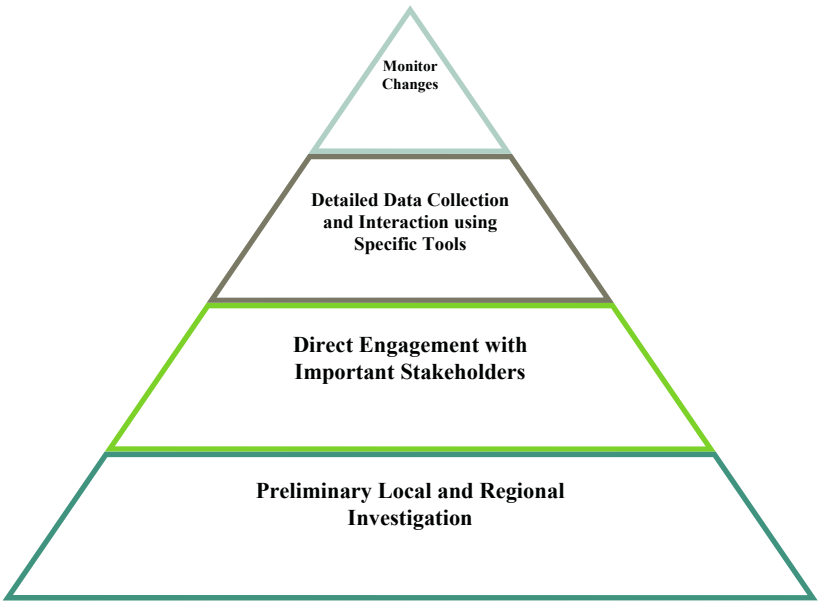
3.3. How is Social Site Characterization Data Gathered?

As is the case with technical site characterization, the process of gathering social data can be iterative. A first round of information to gather would be that which is readily available by reviewing websites, media, published surveys and opinion papers, and talking with stakeholders at all level (local, state and national) with whom the project team already has a relationship. Just as readily available information is used in technical site characterization to develop a preliminary or regional reservoir model, so to can readily available social information provide the developer with a very preliminary understanding of concerns.

A second round of information collection would involve more direct investigation. Important stakeholders – loosely defined as those who influence opinions or have the ability to take the pulse of public opinion – might be consulted through more detailed discussions or interviews. These kinds of discussions form the beginning of relationships that could impact the project as it moves forward.

As a sense of the important issues that need to be addressed is being formed, several specific tools may help to identify specific concerns and potential mitigation options. These tools include focus group interviews; small, interactive project briefings; or structured discussions using frameworks such as the Princeton Wedge Game or an approach to risk assessment using IEA's CCS Features, Events and Processes (FEPs) being pioneered by Schlumberger. These kinds of interactions allow for open-ended conversation which can be very helpful in identifying factors that might not be obvious to someone from outside of the community.

These same kinds of tools can be used during project implementation to monitor changes in public perceptions over time. Also, as a project gets underway, other tools such as public opinion surveys that may not be sensitive enough before opinions are opinions are formed – or informed, may become useful as stakeholders gain experience with a project and the project team.



4. Use of Social Site Characterization in CCS Project Design and Implementation

It is important to recognize that effective public engagement will not guarantee the successful implementation of any specific CCS project – but it will contribute to public acceptance of it. Likewise, it is also important to recognize that not doing any, or poorly executing public engagement activities will not guarantee project failure – but will contribute towards negative public perceptions. We propose six steps for developing effective engagement efforts: (1) research; (2) planning; (3) forming an outreach team; (4) developing materials, messages and communication strategies; (5) conducting proactive, targeted outreach and implementing any specific engagement activities; and, (6) developing a feedback and response process.

4.1. Stakeholder Research

This topic has been addressed above. It is the foundation for the following steps.

4.2. Planning

Effective outreach is about two-way communication. The process of gathering information about important concerns should also yield ideas for measures that could be built into project design and implementation to help alleviate concerns. Stakeholder research might suggest changes to monitoring plans, changes in timing to accommodate seasonal concerns (e.g. hunting season, farming seasons, road access); traffic and /or noise management; further investigation into potentially undocumented but locally known hazards; links to local school or community education programs; or other activities. Further, the process of working with the project team to understand concerns and review options for addressing them is going to make everyone in the project part of the engagement effort. Planning will also focus on communication and outreach goals while taking into consideration the numbers of people your are trying engage and any local considerations regarding access to information.

4.3. Form an Outreach Team

It sounds simplistically obvious, but it is important to establish some structure for the outreach team. People who interact with stakeholders will become the face of the project and these should be people who are involved in and knowledgeable about the technical details of the project as well as those who have more background in communication. A word of caution, however, lack of coordination, inconsistent information, lack of sensitivity to important concerns and other communication gaffes are difficult to avoid when busy technical people also do outreach – but they reflect poorly on the technical competence of the project as well. A communications plan clearly identifying key messages should be created and shared with all members of the Outreach Team. If two team members aren't talking from a shared understanding about stakeholder concerns, then how can they make the claim that they are coordinating technical oversight and implementation of the project? Likewise, accountability is a always a key concern – one that is either identified up front based on experience, or realized after the fact if the team fails to follow-through on easy things like providing information. Establishing some kind of outreach structure facilitates the identification of someone to take responsibility for those kinds of details.

4.4. Develop Materials and Strategies

Often people involved in CCS sacrifice information accessibility for technical completeness and correctness. The result: stakeholders nod their heads politely when reviewing your outreach information but walk away no better informed than when they sat down to read the materials. It is important in developing communication materials to address the concerns that have been identified – even if they are about perceived risk and to package information in terms and formats that people can understand based on their level of interest, education and time. It may be the case that stakeholders will need to hear information several times and in multiple formats for it to make sense. The

Regional Partnerships have developed a broad array of fact sheets, physical models, videos, websites, posters and other information materials that are available as models or for use by others.[9]

There are a variety of strategies that could be used in implementing an outreach program. For example, a project might try to involve locally known people, groups or institutions in the project. These might include universities, offices of economic development, leading business people, schools, community representatives. Involving local people helps facilitate two-way communication and further contribute to transparency. Another strategy might be to create an advisory group or other group that meets periodically to receive in-depth reports on the project. Such a group could help project developers to stay aware of changes in public attitudes and concerns while also ensuring that a group of local stakeholders gains in-depth knowledge of the project – something that many people do not have the time to do.

4.5. Proactive, Targeted Engagement

Sharing information about a CCS project and soliciting input from stakeholders cannot be done passively. Project developers need to seek out opportunities to engage stakeholders. This kind of pro-active engagement will contribute to a sense of project openness and transparency. This should include an active effort to inform the media and to respond to media requests for information.

4.6. Develop and Feedback and Response Process

The analogy to technical site characterization continues to be a good model in thinking about feedback and response processes. In technical site characterization, a series of monitoring activities are designed to calibrate and validate the reservoir simulation model. More importantly, the feedback from monitoring is used to improve the performance of the project by making necessary operational changes. Likewise, developing processes to collect, analyze and respond to feedback gathered during and through outreach is one way to continually improve the overall performance of the project and work towards increasing public acceptance of it. This should include internal processes to review information and develop responses. It should include external processes to show where improvements or changes have been made. It should also include a way to communicate when it is not possible to address certain concerns and why.

4.7. Conclusion

A big focus of risk communication around CCS is to explain why the risks are minimal and how they are being addressed. Having this information ready is important but it only addresses some – and perhaps not even the most important – factors that will influence the public's perceived risk from CCS projects. One way to begin to address this deficiency is to apply the same kind of rigor and methodology in conducting and using social site characterization as is applied in conducting technical site characterization. Gaining understanding and information about the social factors influencing public attitudes as well as the information gleaned by having good relationships with stakeholders can inform CCS project planning, design and implementation.

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